9-974-496-11

Sony Corporation
xxx

PCG-F150/F160/F180/F190 (UC)

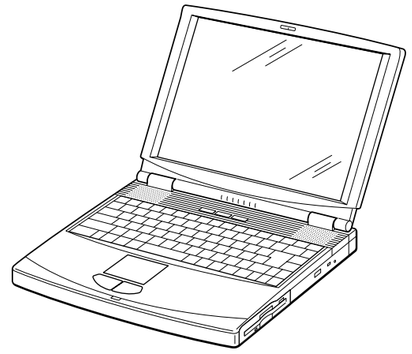
9-974-496-11
99x16xx-1
SONY

English
99x16xx-1
Printed in xxx

PCG-F150/F160/F180/F190

SERVICE MANUAL

US Model
Canadian Model



ILLUST : PCG-F160/F180/F190

9-974-496-11

Notebook Computer

SONY

Information in this document is subject to change without notice.

Caution Markings for Lithium/Ion Battery - The following or similar texts shall be provided on battery pack of equipment or in both the operating and the service instructions.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

CAUTION: The battery pack used in this device may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 100°C (212°F) or incinerate.
Dispose of used battery promptly.
Keep away from children.

Service and Inspection Precautions

1. Obey precautionary markings and instructions

Labels and stamps on the cabinet, chassis, and components identify areas requiring special precautions. Be sure to observe these precautions, as well as all precautions listed in the operating manual and other associated documents.

2. Use designated parts only

The set's components possess important safety characteristics, such as noncombustibility and the ability to tolerate large voltages. Be sure that replacement parts possess the same safety characteristics as the originals. Also remember that the ⚠ mark, which appears in circuit diagrams and parts lists, denotes components that have particularly important safety functions; be extra sure to use only the designated components.

3. Always follow the original design when mounting parts and routing wires

The original layout includes various safety features, such as inclusion of insulating materials (tubes and tape) and the mounting of parts above the printer board. In addition, internal wiring has been routed and clamped so as to keep it away from hot or high-voltage parts. When mounting parts or routing wires, therefore, be sure to duplicate the original layout.

4. Inspect after completing service

After servicing, inspect to make sure that all screws, components, and wiring have been returned to their original condition. Also check the area around the repair location to ensure that repair work has caused no damage, and confirm safety.

5. When replacing chip components...

Never reuse components. Also remember that the negative side of tantalum capacitors is easily damaged by heat.

6. When handling flexible print boards...

• The temperature of the soldering-iron tip should be about 270C.
• Do not apply the tip more than three times to the same pattern.
• Handle patterns with care; never apply force.

Caution: Remember that hard disk drives are easily damaged by vibration. Always handle with care.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

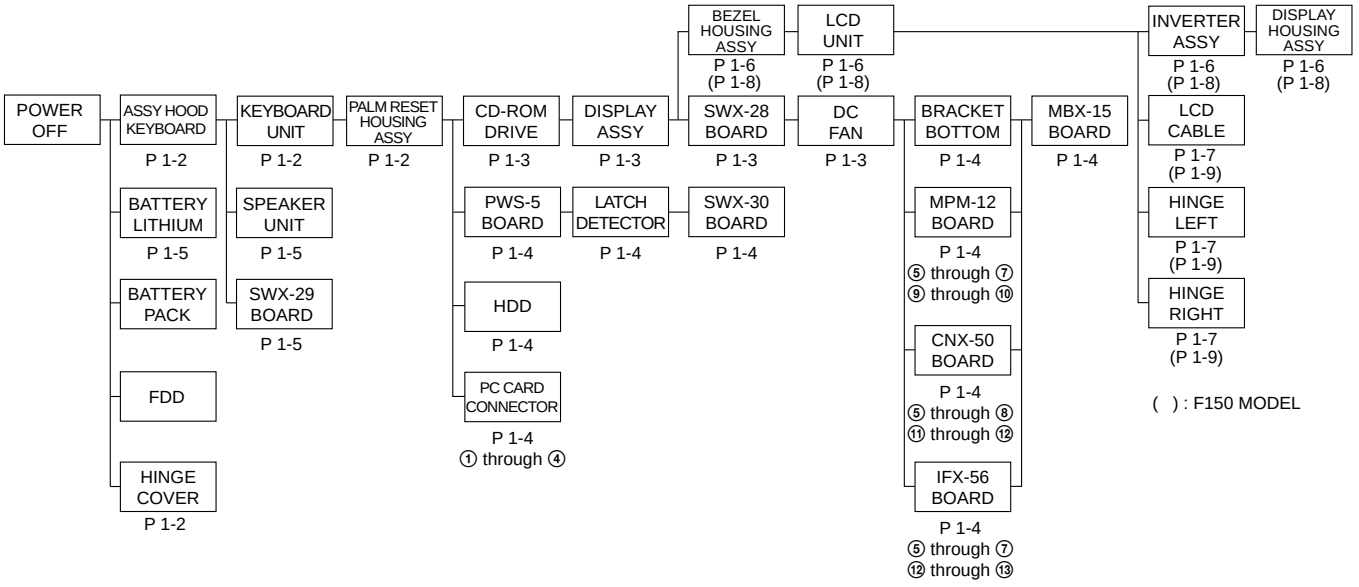
LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

- Abbreviations
  UC : US model / Canadian model

CHAPTER 1.
REMOVAL

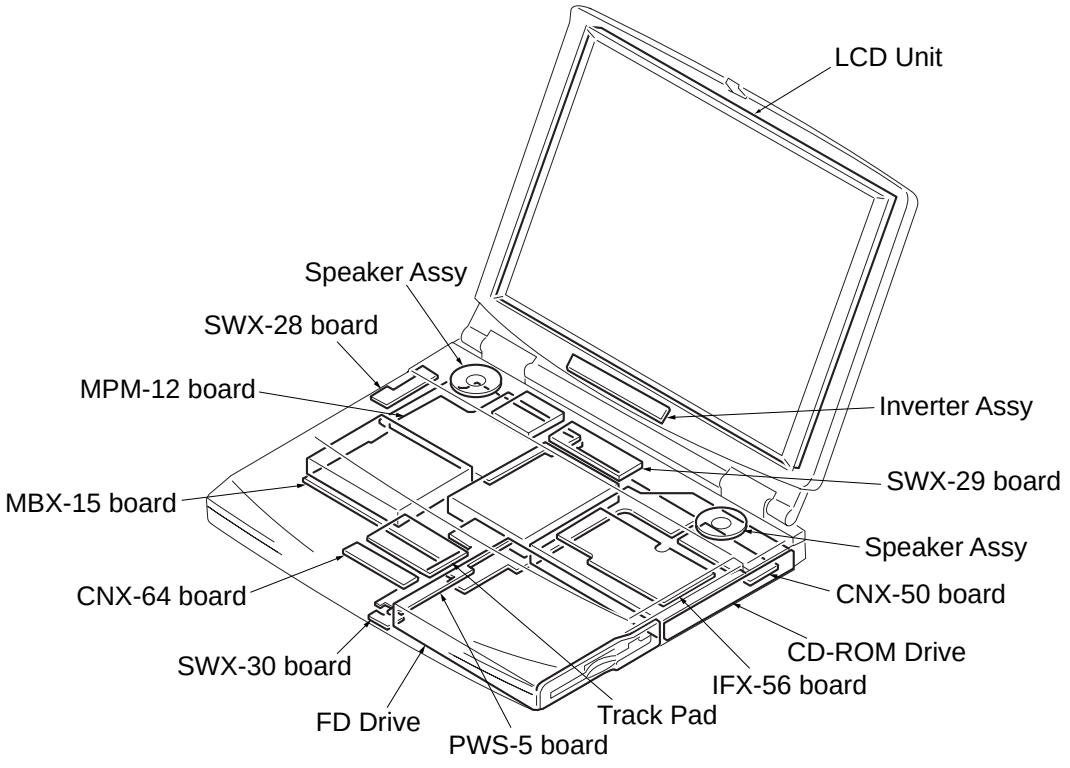
1-1. Flowchart



• P XX means pages that appears in this manual.

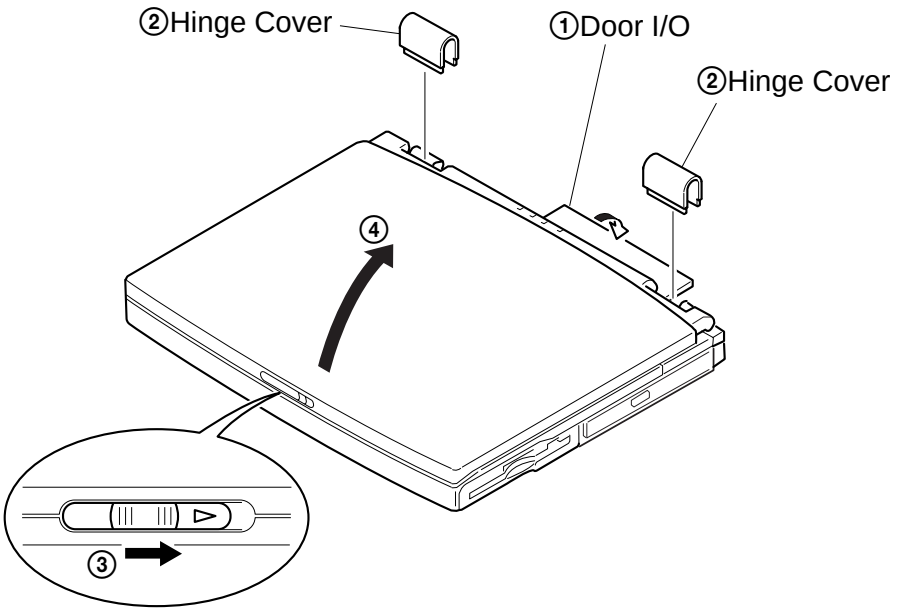
• Remember that hard disk drives are easily damaged by vibration. Always handle with care.

1-2. Main Electrical Parts Location Diagram

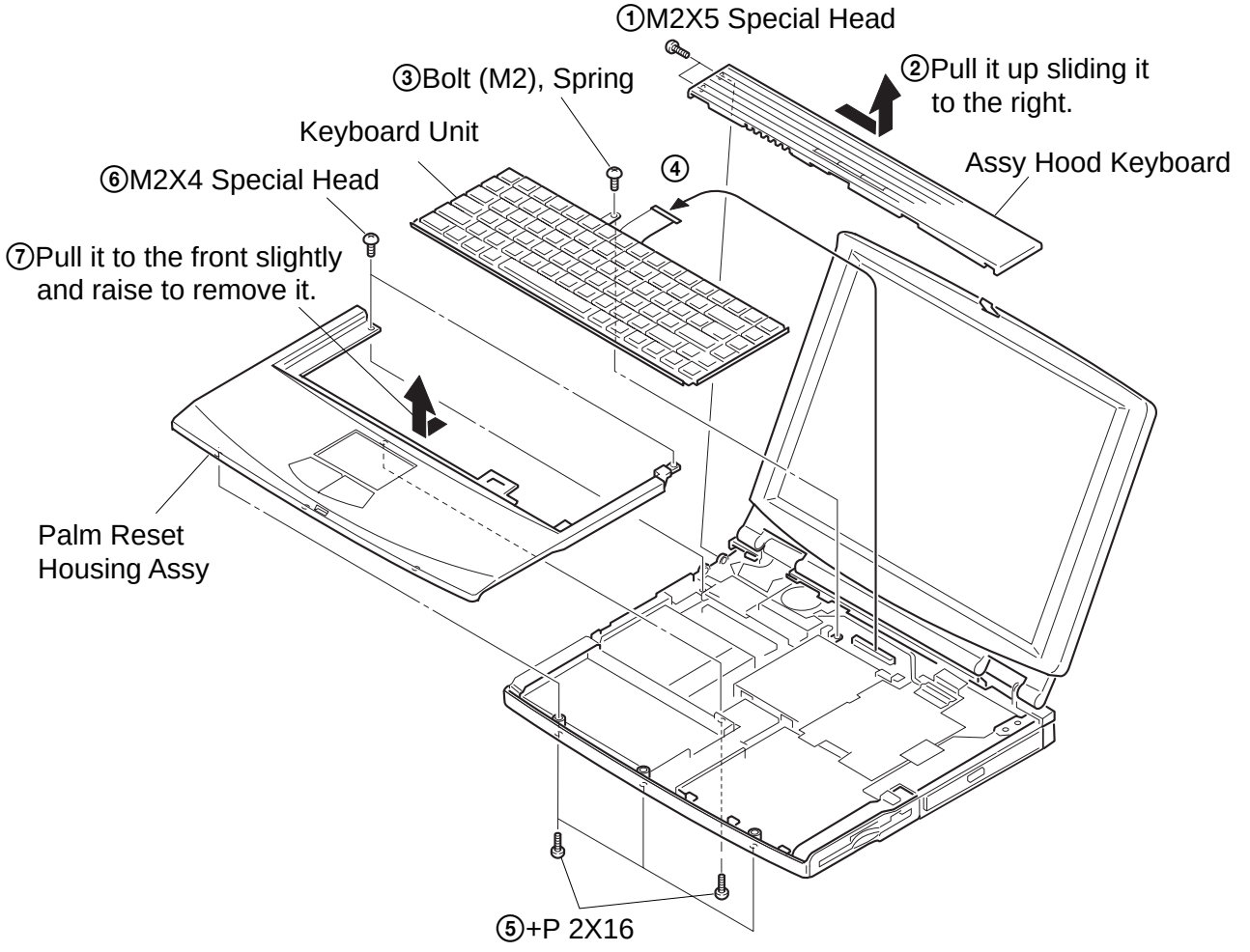


1-3.Removal

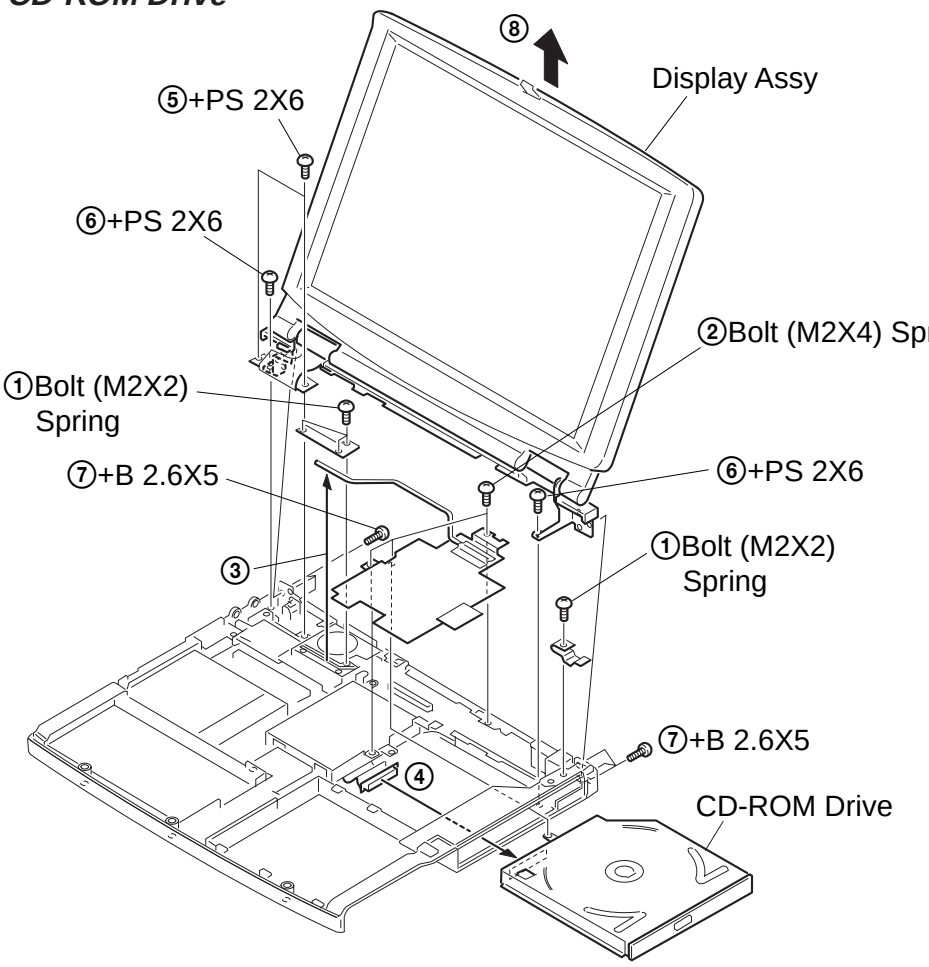
1. Hinge Cover



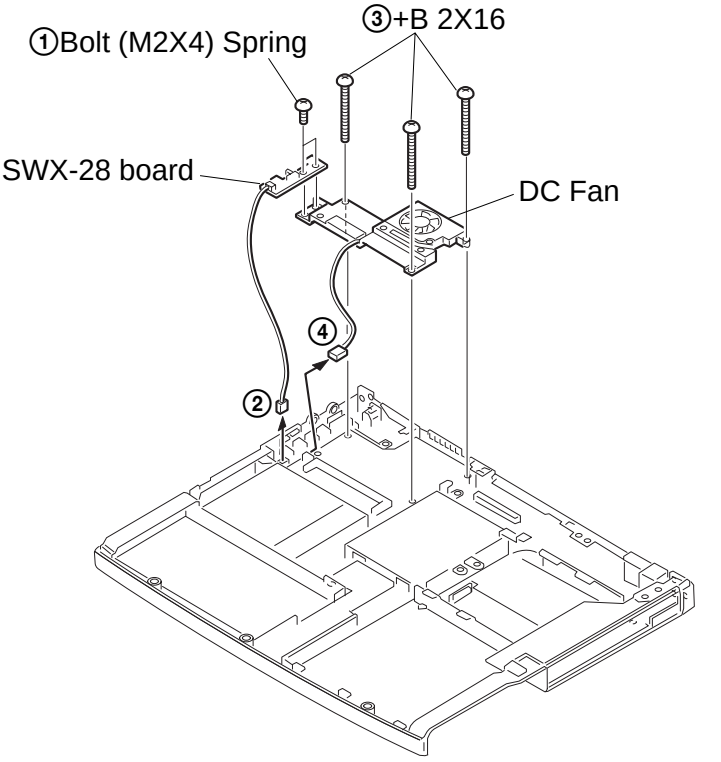
2. Keyboard Unit, Palm Rest Housing Assy, Assy Hood Keyboard



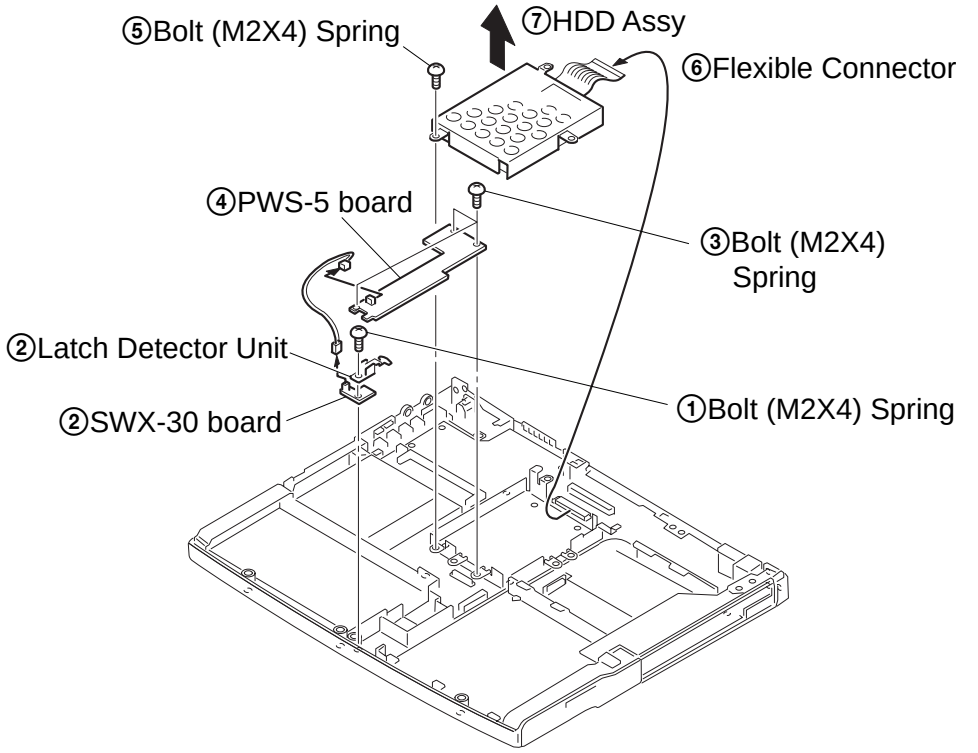
3. Display Assy, CD-ROM Drive



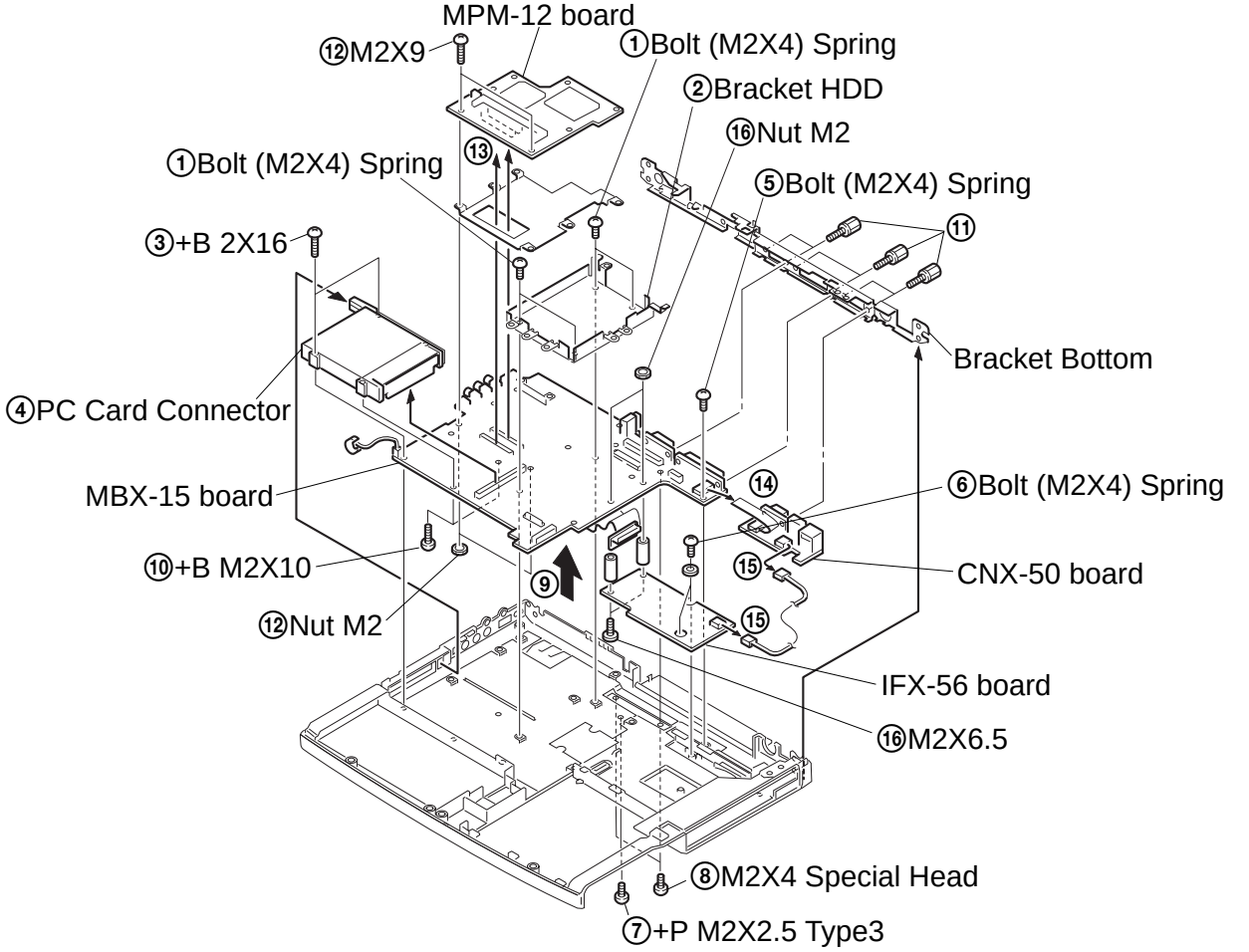
4. DC Fan, SWX-28 board



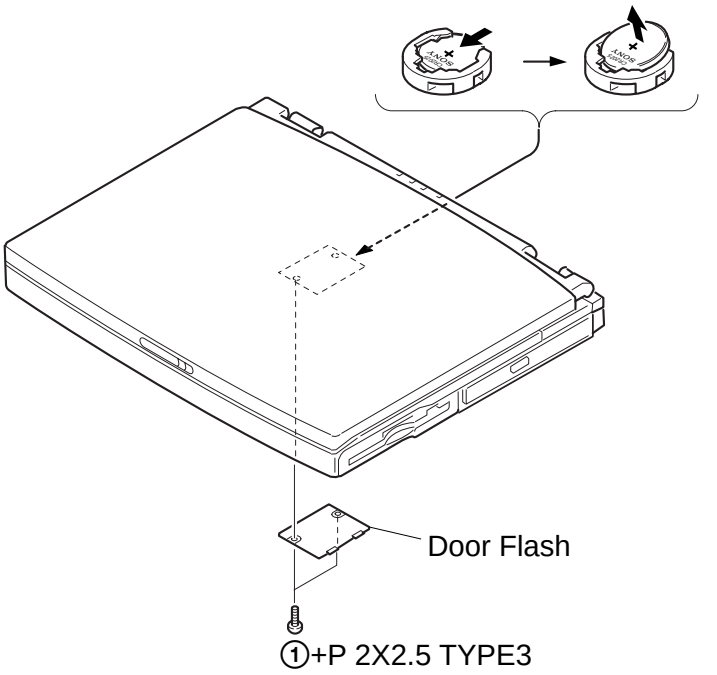
5. HDD Assy, PWS-5 board, Latch Detector Unit, SWX-30 board



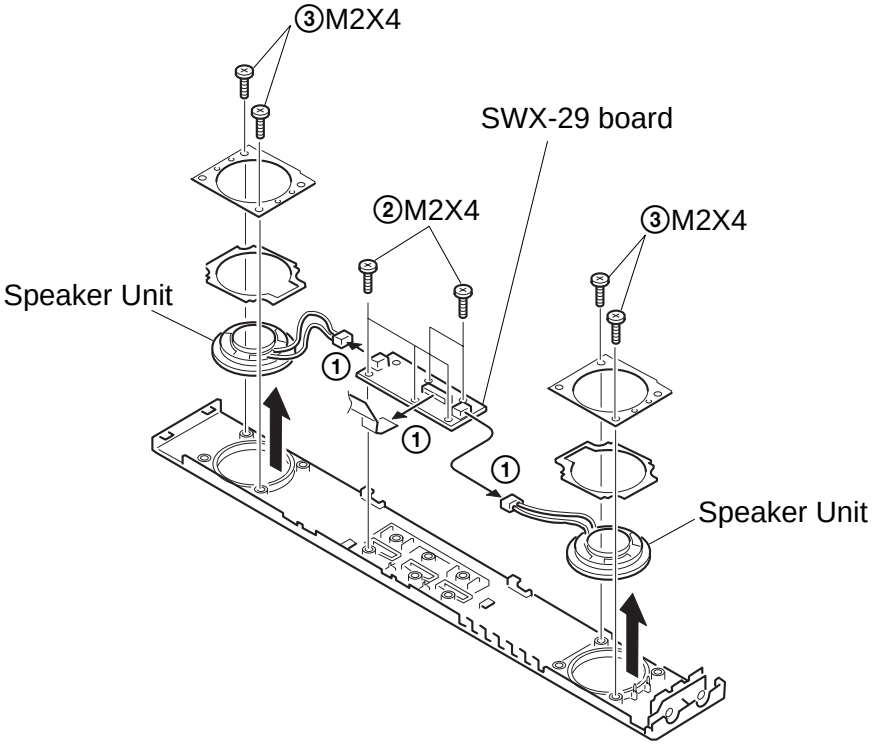
6. PC Card Connector, IFX-56 board, CNX-50 board, MPM-12 board, MBX-15 board



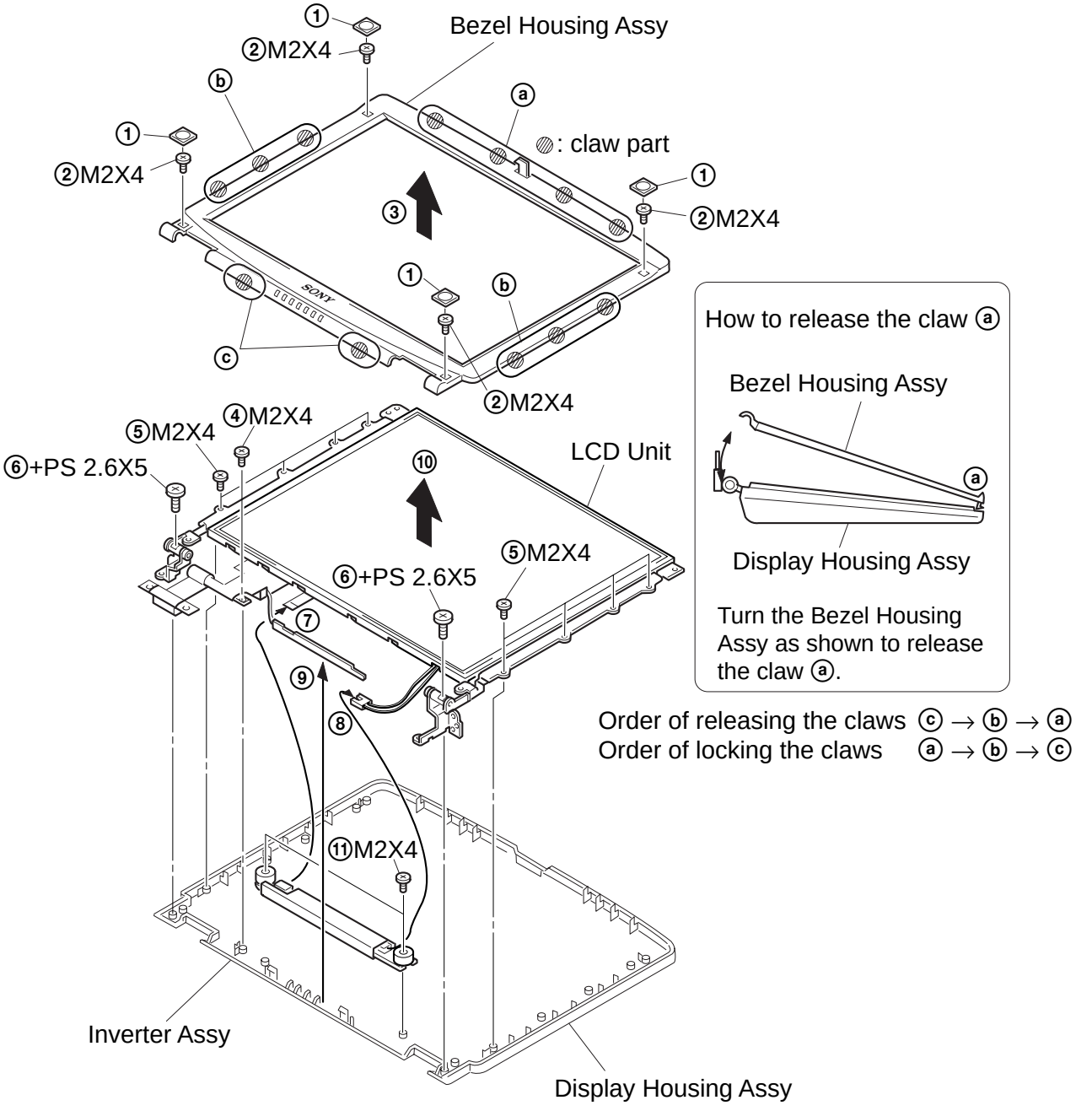
7. Battery, Lithium



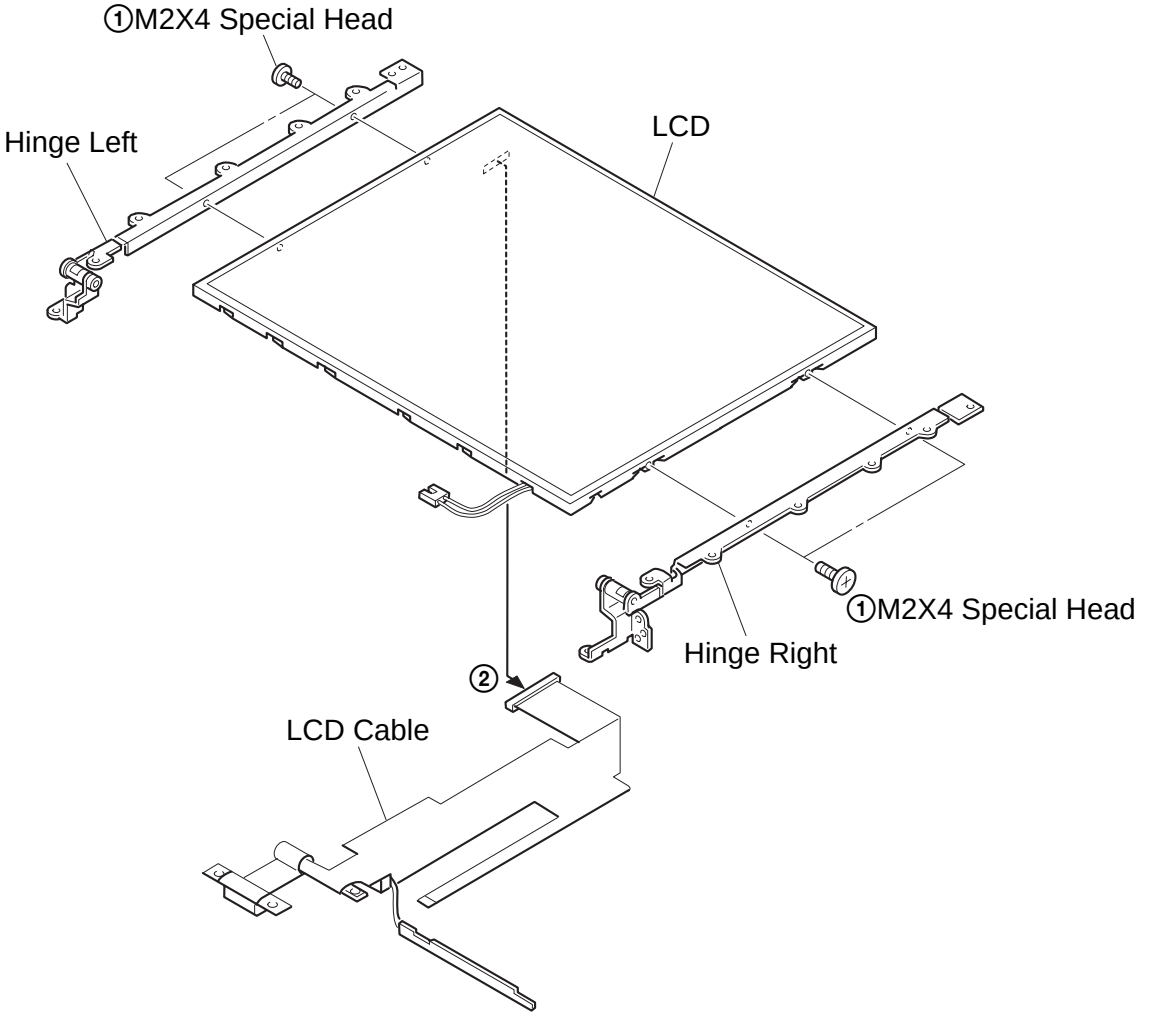
8. Speaker Unit, SWX-29 board



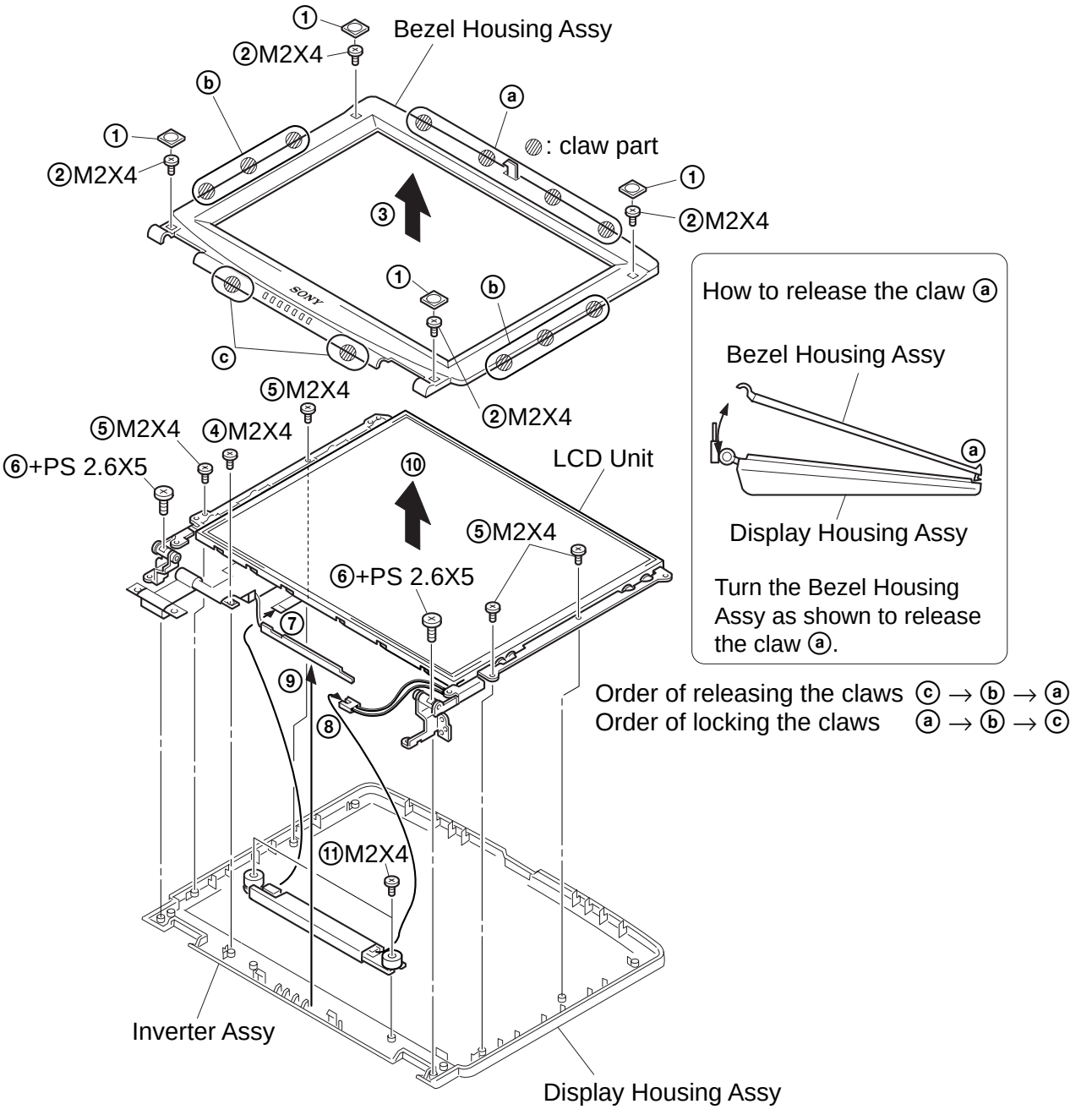
9. Bezel Housing Assy, LCD Unit, Display Housing Assy, Inverter Assy (F160/F180/F190 Model)



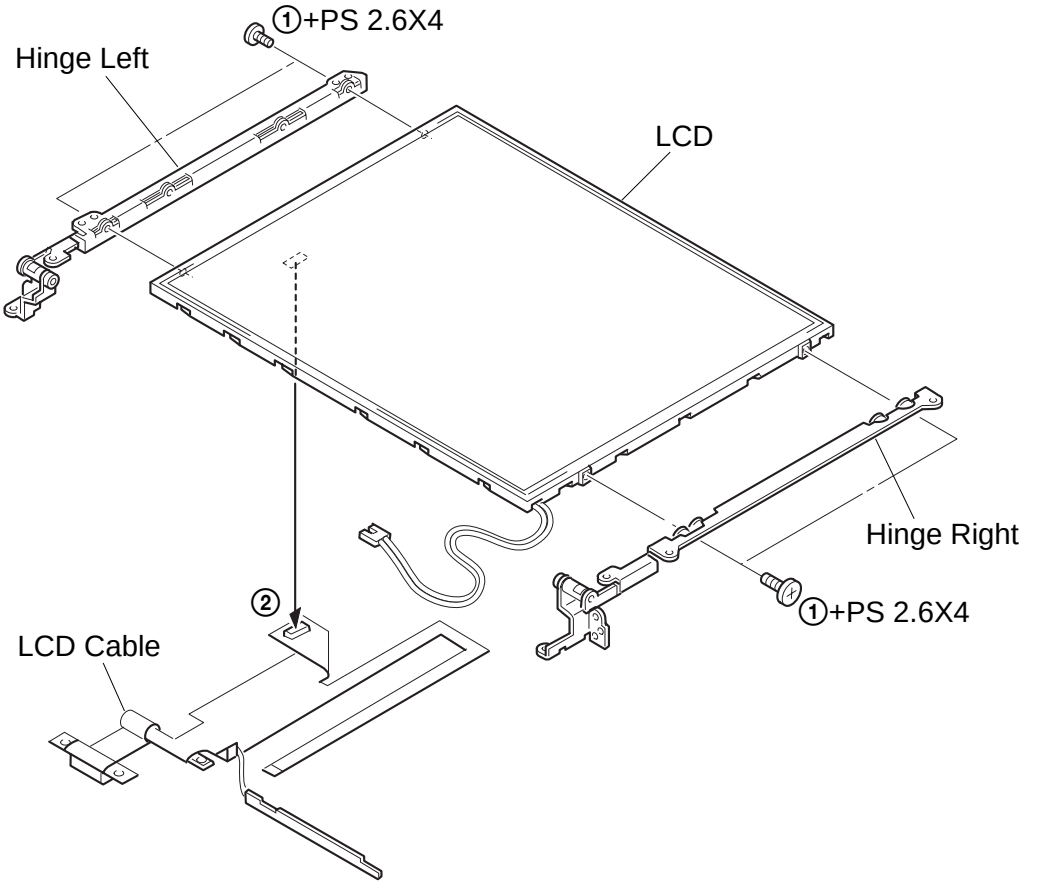
10. Hinge Left, Hinge Right, LCD Cable (F160/F180/F190 Model)



11. Bezel Housing Assy, LCD Unit, Display Housing Assy, Inverter Assy (F150 Model)



12. Hinge Left, Hinge Right, LCD Cable (F150 Model)



CHAPTER 2.
SELF DIAGNOSTICS

2-1. Required Tools and Peripheral Devices

	Tools and Peripheral Devices	Test Items
1	Serial Loopback Tool Loopback tool specified by QA and Factory (Refer to next page.)	Serial Port (COM) test
2	Parallel Loopback Tool Loopback Tool specified by QA and Factory (Refer to next page.)	Parallel Port (printer) test
3	V.34 Modem and Line Simulator	Modem test
4	VGA Monitor and Connection Cable	VGA output test
5	PC Card Tester PCCtest 450 Made by Sycard Corp.	PC Card test
6	USB Tester USB Host Production Tester Made by Computer Access Technology Corp.	USB device test
7	PCG-505G series VAIO for IrDA Function Test	IrDA Function test
8	Port Replicator PCGA-PRF1 for Port Replicator Connector Test	Port Replicator Connector test
9	CD-ROM Bay supplied	CD-ROM test
10	FDD Bay supplied	FDD test
11	Diagnostics FD Media	(Diagnostics starting software)
12	Diagnostics CD-ROM Media	(Diagnostics software)
13	Battery supplied	Battery related tests
14	AC Adaptor supplied	(Power supply for diagnostics)
15	PCG-505G series VAIO for IEEE1394 Test	IEEE1394 Test

[Reference] On Serial/Parallel Loopback Tool

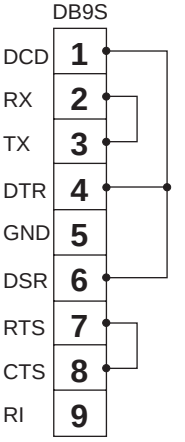
• The serial loopback tool and the parallel loopback tool are necessary for diagnostics of the serial communication line and the parallel communication line. Fabricate the serial loopback tool and the parallel loopback tool locally referring to the connection diagrams shown below.

Serial Loopback Tool : For diagnostics of serial port

SERIAL LOOPBACK CONNECTOR CONNECTION DIAGRAM

• Connector Types DB9S (Female)
• Interface Standard RS-232C
• Loopback Data & Handshake

NOTE: The black round mark "●" indicates soldering.

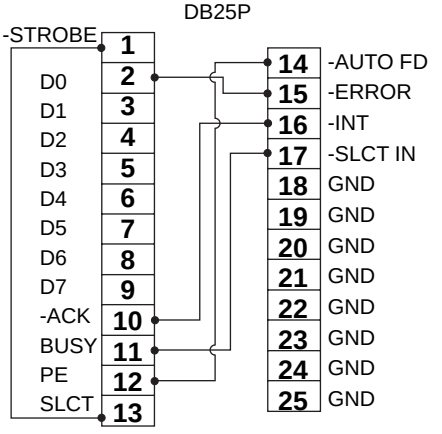


Parallel Loopback Tool : For diagnostics of parallel port

PARALLEL LOOPBACK CONNECTOR CONNECTION DIAGRAM

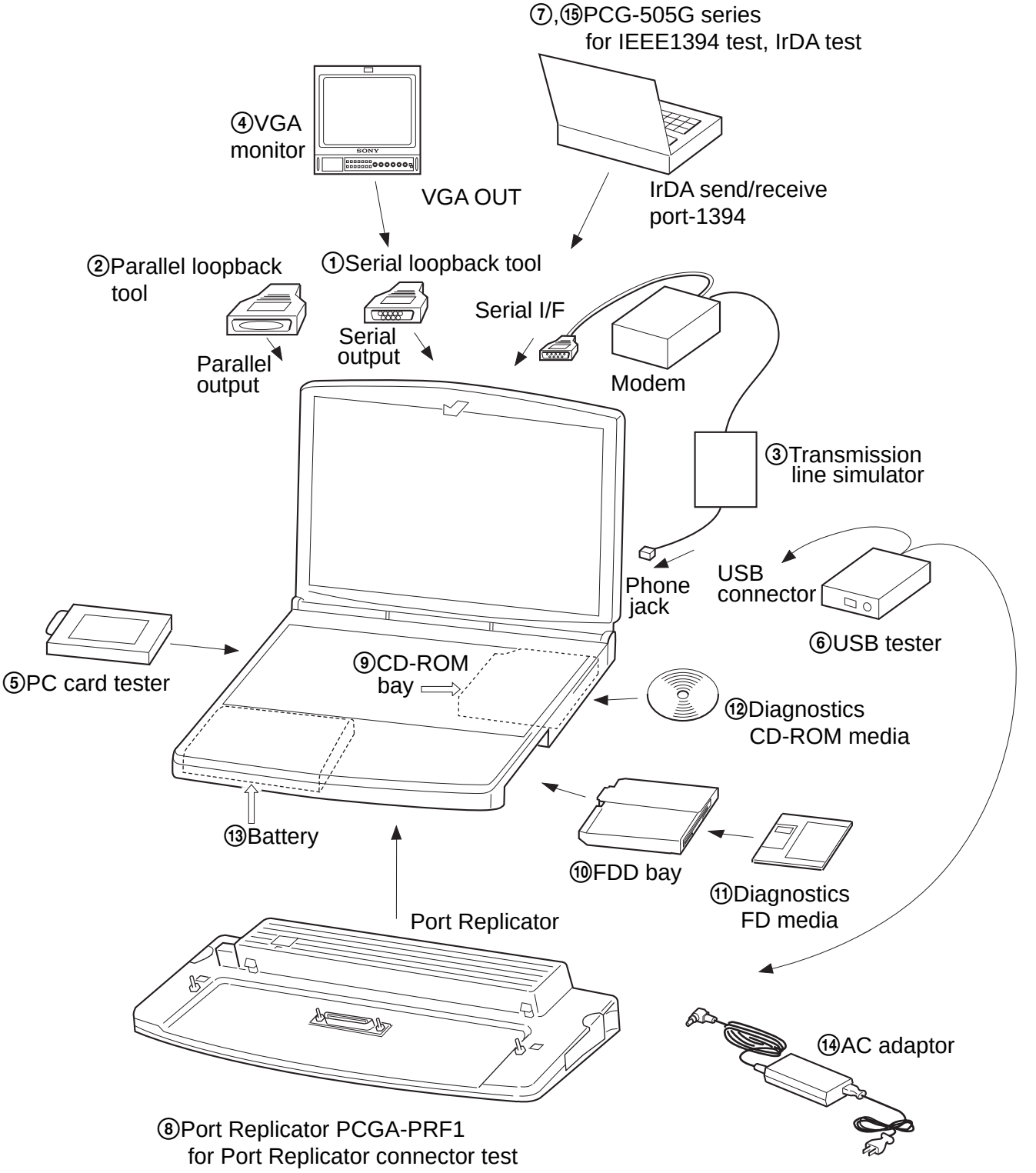
• Connector Types DB25P(Male)
• Interface Standard Centronics
• Loopback Status to Commands

NOTE: The black round mark "●" indicates soldering.



2-2. Tools and Peripheral Device Connection

System Connection Diagram



2-3. How to Start the Diagnostics

Precaution: The supplied floppy disk containing the diagnostics program can be damaged because it will be written the Log and used as FDD read-write test. Be sure to make a backup of the diagnostics floppy disk and use a backup disk for diagnostics.

Starting up the diagnostics

- Specify the FDD as the startup drive so that the system boots up from the diagnostics FD.
- Insert the diagnostics CD-ROM media into the CD-ROM bay. Insert the diagnostics FD into the FDD bay. Turn off the main power of the system once and back on to boot up the system from the diagnostics FD.
- When the system is booted from the diagnostics floppy disk, the start menu appears. Select a desired item to execute the diagnostics. When PASS is displayed as the result of diagnostics, the test is ended without any errors. When FAIL is displayed as the result of diagnostics, the test is ended with some errors.

2-4. Test Items

The test items are shown below.

2-4-1. Start Menu

1: Diagnostics for PCG-F1 Series

Select the respective test items of the PCG-F1 Series Diagnostics from the menu and perform the selected test.

2: PASSWORD BYPASS

The password which bypasses the PASSWORD is created.

3: Quit START MENU

Exits the diagnostics.

2-4-2. PCG-F1 Series Diagnostics

List of Test Items

The test items which are performed one after another or by selecting a specific item, are listed as follows. (Short descriptions of the respective test items follow later.)

1. Machine configuration
2. Check system bios revision
3. Check configuration
4. Battery test group
   (1) Battery 1 test
   (2) Fan test
5. CD ROM test
6. FDD test
7. HDD test
8. Touch pad test
9. LED test
10. Main memory test
11. Main system test

12. Mouse test
13. Parallel loopback test
14. PC Card test
15. Serial loopback test
16. USB test
17. Port Replicator connector test
18. Irda test
19. Video test
20. IEEE1394 test
21. Aging (Short time) HDD test
22. Aging (Long time) HDD test
23. Aging (Short time)
24. Aging (Long time)

The following tests are performed using Windows 98.

A. Audio test group
   (1) Audio test (MIC test)
   (2) Audio test (Speaker test)

B. Modem loopback test

2-4-3. Short Descriptions of the Test Items

1. Machine configuration
   Selects the type of configuration of the PCG-F1 series computer.
   Because some diagnostics operate based on the selected configuration, perform this item first of all.

2. Check system bios revision
   Indicates the BIOS which is currently used.

3. Check configuration
   Tests clocks and CPUID.

4. Battery test group
   Performs charging and discharging test of a battery.
   A used battery with 30% to 80% already charged battery is necessary.
   (1) Battery 1 test
      This tests the battery 1.
   (2) Fan test
      This tests the fan.

5. CD ROM test
   Tests the CD-ROM.

6. FDD test

Tests the FDD. Note that the diagnostics floppy disk can be damaged when this test ends in fail.

7. HDD test

Tests the HDD.

8. Touch pad test

Tests the touch pad. Start pressing the keyboard surely from an end of a keyboard.
The Fn key is disabled. Press “Fn+End” instead.

9. LED test

Check that the LEDs start illuminating from the left of the LEDs.

10. Main memory test

Tests the memory.

11. Main system test

Tests the entire system including CPU, MATH and DMA.

12. Mouse test

Tests the mouse. Move the cursor inside the white square mark (□) and operate the system in accordance with instruction displayed.

13. Parallel loopback test

Tests the parallel (printer) port. The jig is necessary.
Connect the jig to the parallel port.

14. PC Card test

Tests the PC card. The PC card tester jig is necessary. Insert and remove the PC card tester in accordance with instruction displayed.

15. Serial loopback test

Tests the COM port. The serial loopback jig is necessary.
Connect the serial loopback jig to the COM port.

16. USB test

Tests the USB port. To perform this test, the USB jig is necessary.
Connect the USB jig to the USB port.

17. Port Replicator connector test

To perform this test, the port replicator and USB tester are necessary.

18. Irda test

Tests the Irda communication.

To perform this test, the PCG-505G series computer is necessary for communication.

19. Video test

Tests the circuit blocks related to the video display.

Tests the various video modes. A part of display is not shown as the video signal is displayed partly outside the screen in some tests of LCD (i.e., 1024 x 768 mode) when using the SVGA (800 x 600) displays. But this is normal.

20. IEEE1394 test

Executes the data transfer test of the IEEE1394.

21. Aging (Short time) HDD test

Executes the memory and main system tests repeatedly including the HDD test.

It takes about four hours. Contents of HDD are destroyed when this test is performed.

22. Aging (Long time) HDD test

Executes the memory and main system tests repeatedly including the HDD test.

It takes about ten hours. Contents of HDD are destroyed when this test is performed.

23. Aging (Short time)

Executes the memory and main system tests repeatedly. It takes about fifteen minutes.

24. Aging (Long time)

Executes the memory and main system tests repeatedly. It takes about ten hours.

A. Audio test group

Tests the audio related items.

(1) Audio test (MIC test)

Tests microphone.

(2) Audio test (Speaker test)

Tests speaker.

B. Modem loopback test

Tests the data send/receive between modem and computer. The jig modem is necessary.

Connect the jig modem to the modem port of the PCG-F1 series VAIO.

2-5. About the PASSWORD Bypass

When item “3: Return to START MENU” of the start menu is selected, the following display appears.

```
Password Bypass Program
© 1999 Sony Corporation All rights reserved.
Input last 7 bytes of Serial number
(if serial xxxxxxxx-ooooooo , input serial number → ooooooo)
input serial number →
```

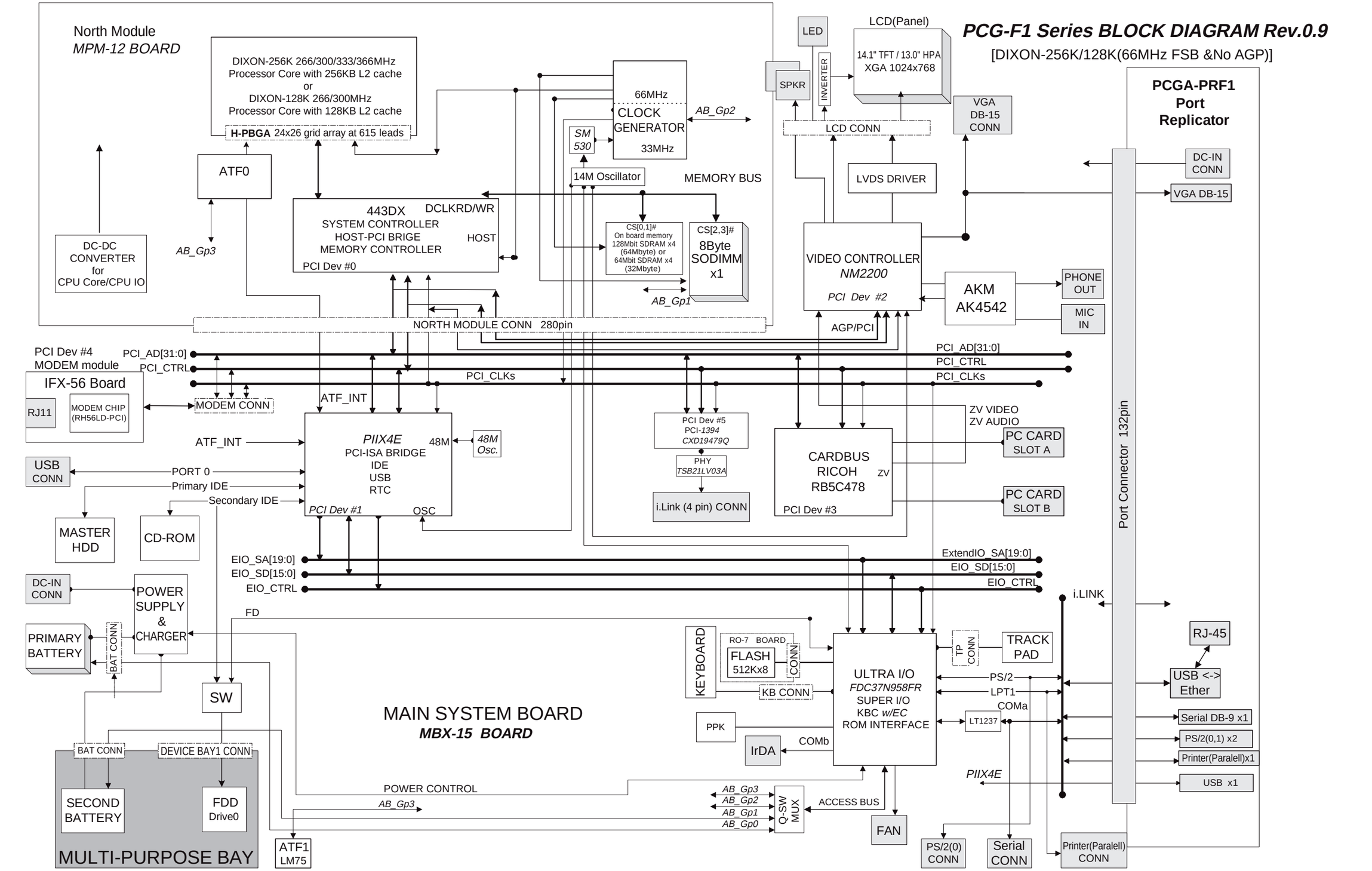
Enter the lower seven digits of the serial number of your system. Then the following message appears.

```
Bypassed pass word → @@@@@@@
```

Enter the lower seven digits of the serial number of your system into the @@@@@@@ portion of the password input display.

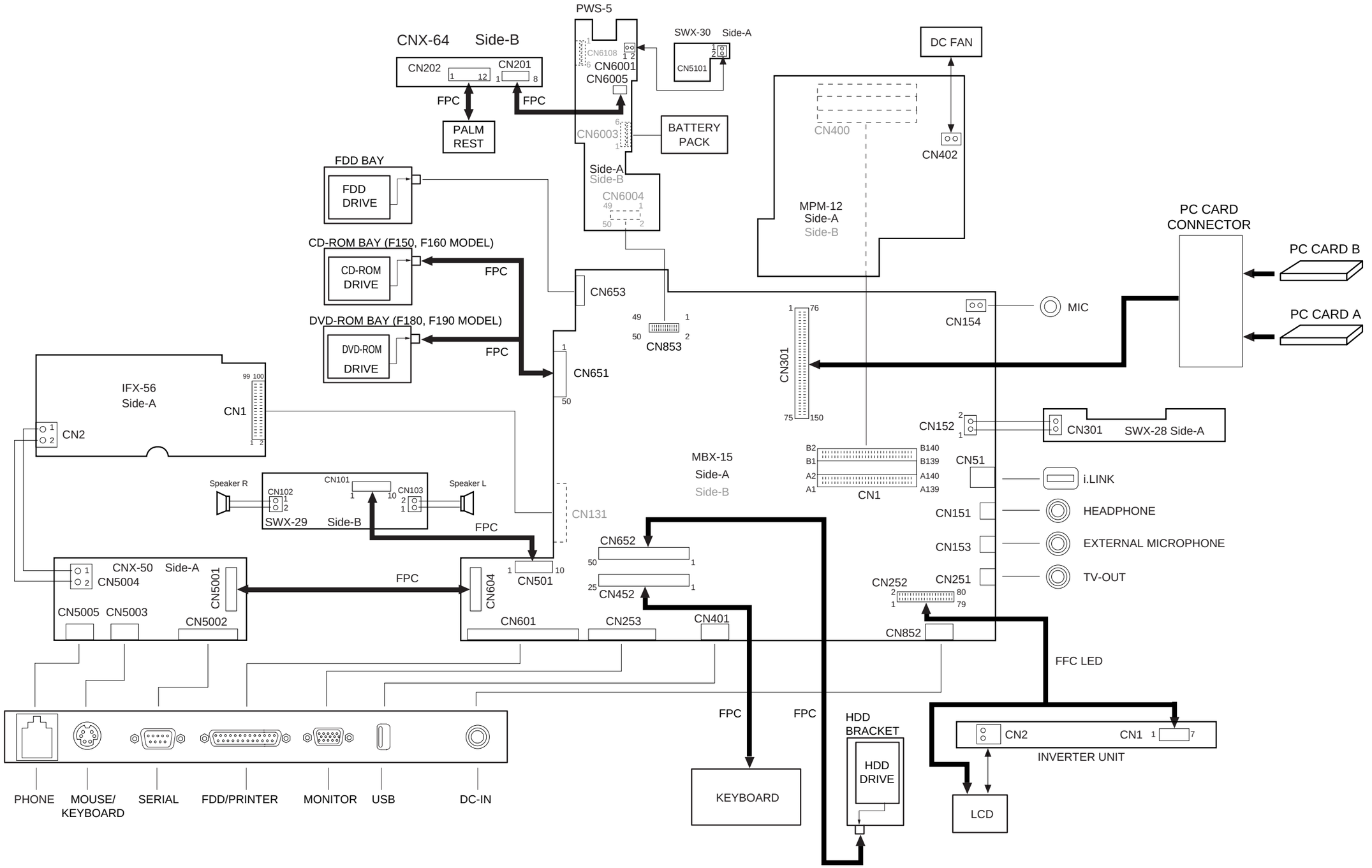
CHAPTER 3.

BLOCK DIAGRAM



CHAPTER 4.

FRAME HARNESS DIAGRAM



CHAPTER 5.
EXPLODED VIEWS AND PARTS LIST

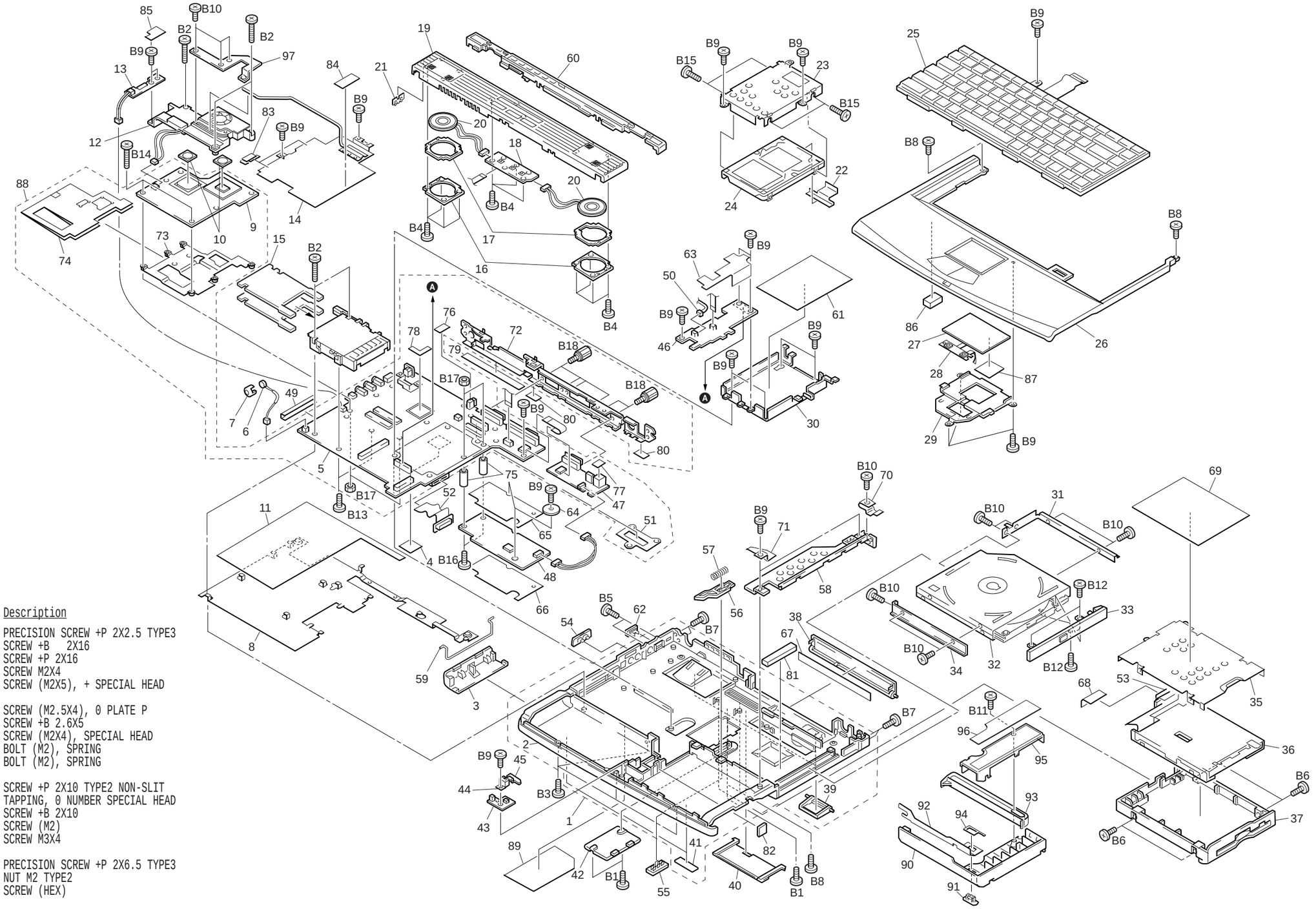
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

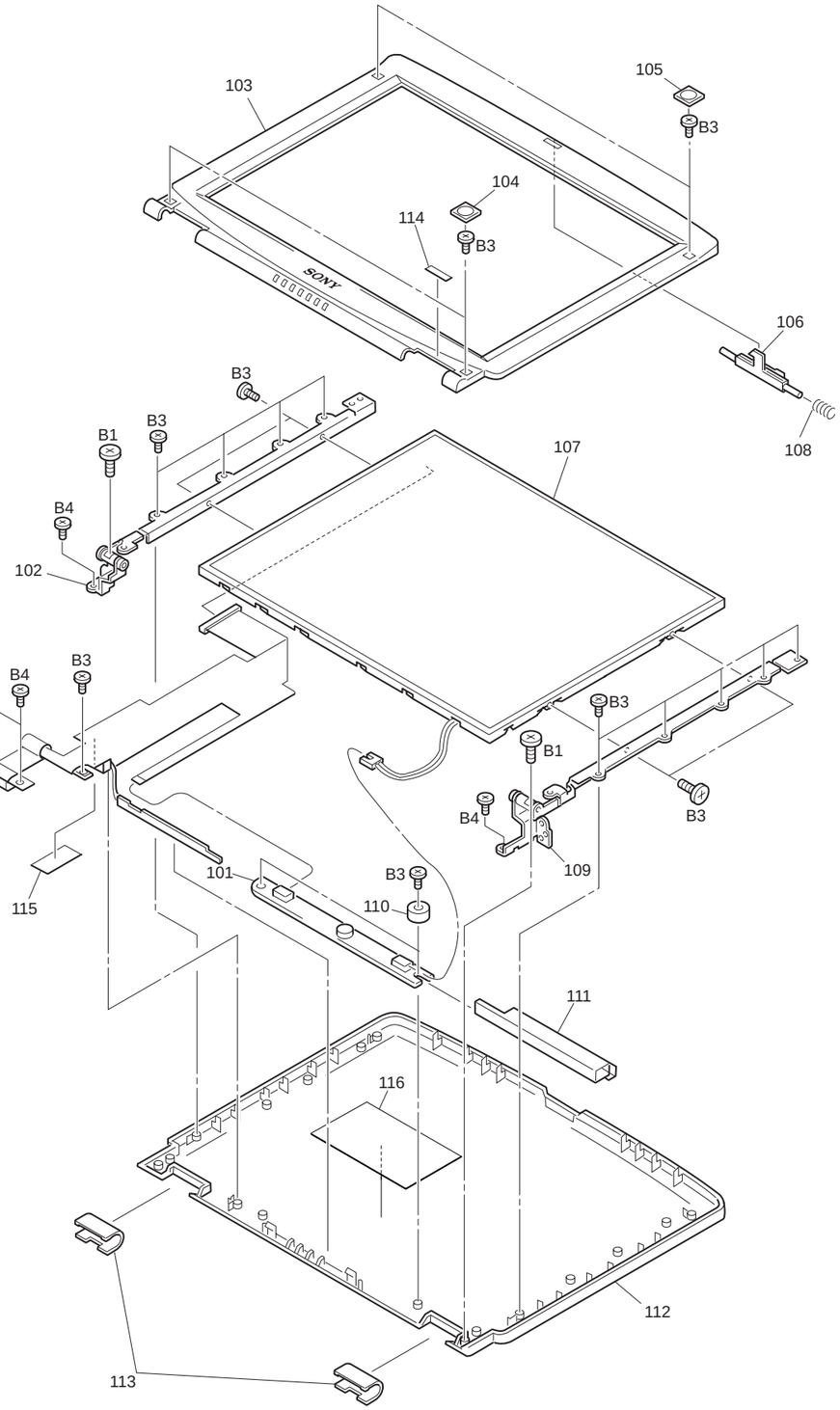
5-1. Main Section

Ref.No.	Part No.	Description
1	X-4622-145-1	ASSY BOTTOM (E)
* 2	4-640-835-01	HOUSING BOTTOM
3	4-640-837-01	DOOR BATTERY
4	A-8056-031-A	RO-27 COMPLETE (K)
5	A-8056-013-A	COMPLETE PWB MBX-15
6	1-542-331-12	MICROPHONE UNIT
* 7	4-641-495-01	HOLDER MIC
* 8	4-640-856-01	HEAT SINK BOTTOM
9	A-8056-000-A	COMPLETE PWB MPM-12 (P366) (F190)
9	A-8056-003-A	COMPLETE PWB MPM-12 (P333) (F180)
9	A-8056-005-A	COMPLETE PWB MPM-12 (P300) (F150:US/Canadian/UK/German/Austria/French,F160)
9	A-8056-009-A	COMPLETE PWB MPM-12 (C300) (F150:Swiss)
10	4-639-101-01	SHEET (N), THERMAL
* 11	4-640-874-01	INSULATOR HEATSINK BOTTOM
12	1-763-330-11	FAN, DC
13	A-8056-025-A	COMPLETE PWB SWX-28
14	4-640-819-01	PLATE HEAT T
15	4-627-811-21	CARD, DUMMY
16	4-640-821-01	PLATE SPK
17	4-640-822-01	CUSHION SPK
18	A-8056-027-A	COMPLETE PWB SWX-29
19	X-4622-047-1	ASSY HOOD KEYBOARD
20	1-529-287-11	SPEAKER UNIT
21	4-640-823-01	PLATE HOOD
22	1-790-639-11	FPC 50PIN (FOR HDD)
23	4-640-864-01	COVER HDD
24	1-772-014-11	HDD (4.3GB) (EXCEPT F190)
24	1-772-015-11	HDD 6.4GB (9.5MM) (F190)
25	1-418-041-21	KEY BOARD UNIT
26	X-4622-043-1	ASSY PALMRESET
27	1-759-708-11	PAD, TRACK
28	A-8056-023-A	COMPLETE PWB CNX-64
29	4-640-862-01	BRACKET PAT
* 30	4-640-853-01	BRACKET HDD
31	4-640-861-01	BRACKET CD-ROM R
32	1-772-033-11	CD-ROM (X24) (F150, F160)
32	1-759-715-11	DVD-ROM DRIVE (F180, F190)
33	X-4622-048-1	ASSY DOOR CD-ROM (F150, F160)
33	X-4622-049-1	ASSY DOOR DVD-ROM (F180, F190)
34	4-640-860-01	BRACKET CD-ROM L
35	4-640-828-01	PLATE FDD
36	1-772-034-11	FDD
37	X-4622-050-1	ASSY BOTTOM FDD
38	4-640-838-01	DOOR I/O
* 39	4-640-850-01	FOOT REAR
* 40	4-640-863-01	DOOR DOCKING CONNECTOR
41	4-640-851-01	FOOT FRONT
* 42	4-640-839-01	DOOR FLASH
43	A-8056-017-A	COMPLETE PWB SWX-30
44	4-635-256-01	LATCH DETECTOR BASE
45	4-635-255-02	LATCH DETECTOR
46	A-8056-015-A	COMPLETE PWB PWS-5
47	A-8056-029-A	COMPLETE PWB CNX-50
48	A-8056-021-A	COMPLETE PWB IFX-56 (J)
* 49	4-641-139-01	INSULATOR PC CARD
50	1-790-585-11	CORD, CONNECTION
51	X-4622-085-1	ASSY PANEL CONNECTOR
52	1-790-640-11	FPC 50PIN (FOR CD-ROM)
53	1-790-641-11	FPC 50PIN (FOR FDD)
* 54	4-640-840-01	BUTTON PW
* 55	4-640-845-01	BUTTON BAY
* 56	4-640-846-01	LATCH BAY
* 57	4-640-854-01	SPRING BAY
* 58	4-640-855-01	BRACKET BOTTOM
* 59	4-640-857-01	DOOR BATTERY SPRING
* 60	4-640-865-01	DISPLAY BASE
61	4-640-875-01	INSULATOR HDD
* 62	4-640-877-01	LENS IR
63	4-640-878-01	COVER BATTERY CONNECTOR
* 64	4-641-188-01	SPACER MODEM
* 65	4-641-189-01	INSULATOR MODEM A
* 66	4-641-190-01	INSULATOR MODEM B
* 67	4-641-366-02	LABEL I/O
68	4-641-629-01	INSULATOR FDD
69	4-641-763-01	LABEL FD
70	4-641-850-01	SPRING (CD-ROM), PLATE
71	4-641-851-01	SPRING (FDD), PLATE
72	4-640-852-01	BRACKET I/O
73	4-640-820-01	PLATE STAND OFF
74	4-641-365-01	INSULATOR A
75	4-640-895-01	STAND OFF (IFX)
76	4-640-515-31	GASKET
77	4-641-844-01	GASKET (PS2)
78	4-642-094-01	THERMAL SHEET V
79	4-640-515-01	GASKET
80	4-640-515-21	GASKET
* 81	4-641-842-01	GASKET (CD-ROM)
* 82	4-641-843-01	GASKET (FDD)
* 83	4-641-846-01	FINGER (PLATE, ALUMINUM)
* 84	4-641-853-01	TAPE (PLATE), SHIELD
* 85	4-642-066-01	SHEET PW
* 86	4-641-841-01	GASKET (PALM)
* 87	4-641-852-01	TAPE (PAD), SHIELD
88	A-8045-382-A	1060 MAIN P2 366 64 ASSY (S) (F190)
88	A-8045-383-A	1060 MAIN P2 333 64 ASSY (S) (F180)
88	A-8045-384-A	1060 MAIN P2 300 64 ASSY (S) (F160)
88	A-8045-385-A	1060 MAIN P2 300 32 ASSY (S) (F150)
89	4-641-657-01	LABEL PRODUCT ID (UC) F190
89	4-641-657-11	LABEL PRODUCT ID (UC) F180
89	4-641-657-21	LABEL PRODUCT ID (UC) F160
89	4-641-657-31	LABEL PRODUCT ID (UC) F150
90	4-640-833-01	BOTTOM WEIGHT SAVER
91	4-640-834-01	BUTTON WEIGHT SAVER
92	4-640-847-01	LATCH WEIGHT SAVER
93	4-640-968-01	ARM WEIGHT SAVER
94	4-640-969-01	CLICKER WEIGHT SAVER
95	4-640-970-01	COVER WEIGHT SAVER
96	4-641-764-01	LABEL WEIGHT SAVER
97	4-641-849-01	GND PLATE



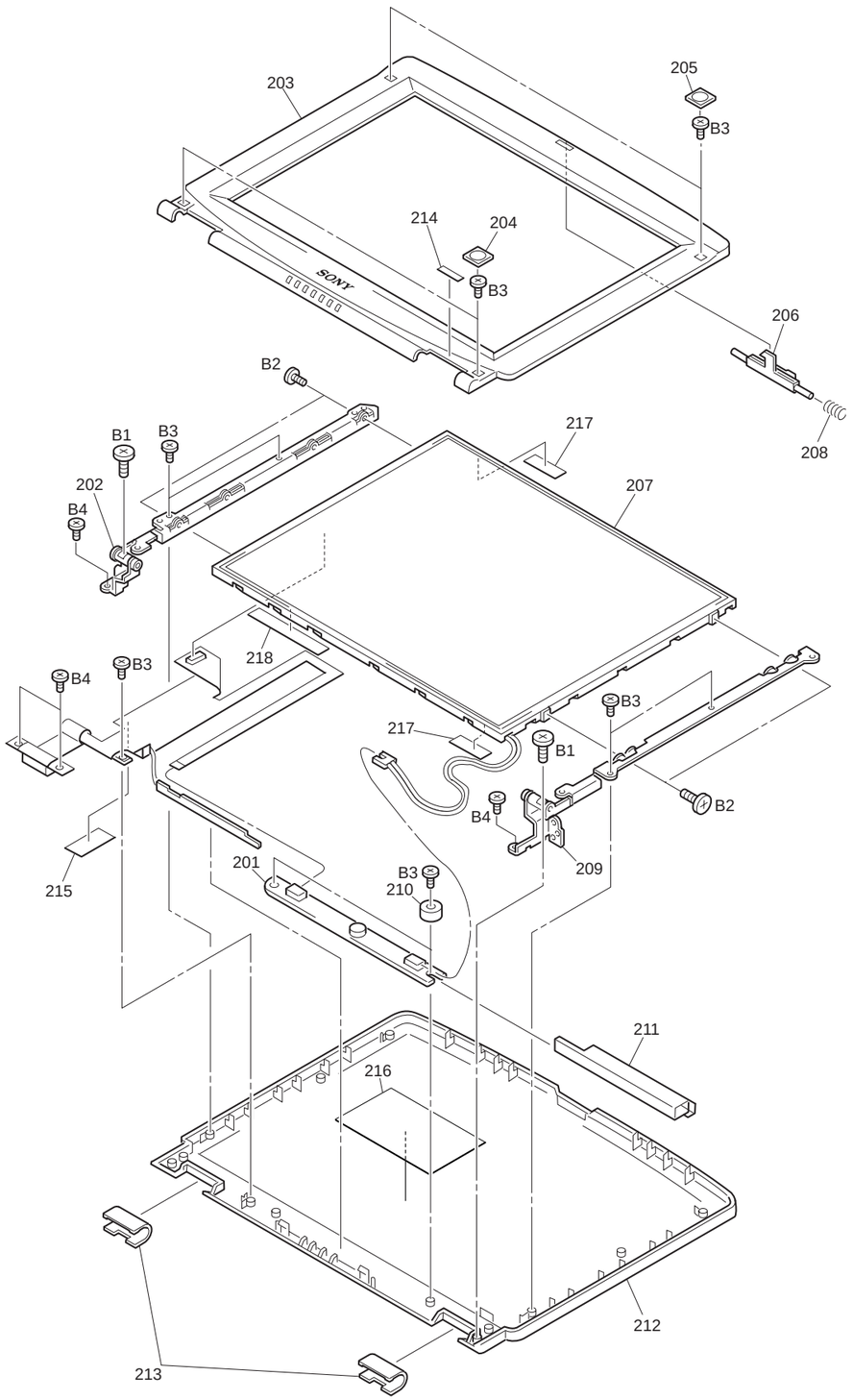
Ref.No.	Part No.	Description
B1	7-627-854-08	PRECISION SCREW +P 2X2.5 TYPE3
B2	7-621-772-80	SCREW +B 2X16
B3	7-621-256-00	SCREW +P 2X16
B4	4-639-112-01	SCREW M2X4
B5	4-641-655-01	SCREW (M2X5), + SPECIAL HEAD
B6	4-641-656-01	SCREW (M2.5X4), 0 PLATE P
B7	7-621-775-20	SCREW +B 2.6X5
B8	4-641-726-11	SCREW (M2X4), SPECIAL HEAD
B9	4-640-694-11	BOLT (M2), SPRING
B10	4-640-694-41	BOLT (M2), SPRING
B11	7-685-106-19	SCREW +P 2X10 TYPE2 NON-SLIT
B12	4-642-229-01	TAPPING, 0 NUMBER SPECIAL HEAD
B13	7-621-772-50	SCREW +B 2X10
B14	3-740-546-21	SCREW (M2)
B15	4-635-301-01	SCREW M3X4
B16	7-627-853-78	PRECISION SCREW +P 2X6.5 TYPE3
B17	7-622-205-05	NUT M2 TYPE2
B18	4-635-966-01	SCREW (HEX)

5-2. LCD Section (F160/F180/F190 Model)



Ref.No.	Part No.	Description
101	1-418-297-11	INVERTER UNIT
102	X-4622-055-1	HINGE LEFT 14T (F160, F180, F190)
103	X-4622-046-1	ASSY HOU, BEZEL 14 (F160, F180, F190)
104	4-635-277-11	COVER SCREW LOWER
105	4-635-276-11	COVER SCREW UPPER
106	4-637-902-11	LATCH
107	1-803-521-11	LCD UNIT (14.1 TST XGA)(F160, F180, F190)
108	4-635-272-01	SPRING,COMPRESSION
109	X-4622-056-1	HINGE RIGHT 14T (F160, F180, F190)
110	4-635-274-01	BRACKET INVERTER
111	4-640-892-01	INSULATOR INVERTER
112	X-4622-070-1	ASSY HOU, DISPLAY 14 (F160, F180, F190)
113	4-640-876-01	COVER HINGE
114	4-641-762-21	LABEL ID (F190)
114	4-641-762-31	LABEL ID (F180)
114	4-641-762-41	LABEL ID (F160)
115	4-641-768-01	TAPE (LCD), GND
116	4-642-228-01	SHEET, RADIATION
B1	7-628-254-00	SCREW +PS 2.6X5
B3	4-641-726-01	SCREW (M2X4), SPECIAL HEAD
B4	7-628-253-20	SCREW +PS 2X6

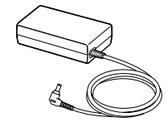
5-3. LCD Section (F150 Model)



Ref.No.	Part No.	Description
201	1-418-297-11	INVERTER UNIT
202	X-4622-051-1	HINGE LEFT 13H (F150)
203	X-4622-045-1	ASSY HOU, BEZEL 13H (F150)
204	4-635-277-11	COVER SCREW LOWER
205	4-635-276-11	COVER SCREW UPPER
206	4-637-902-11	LATCH
207	1-803-345-11	LCD UNIT (13.0" DSTN XGA) (F150)
208	4-635-272-01	SPRING,COMPRESSION
209	X-4622-052-1	HINGE RIGHT 13H (F150)
210	4-635-274-01	BRACKET INVERTER
211	4-640-892-01	INSULATOR INVERTER
212	X-4622-044-1	ASSY HOU, DISPLAY 13 (F150)
213	4-640-876-01	COVER HINGE
214	4-641-762-51	LABEL ID (F150)
215	4-641-768-01	TAPE (LCD), GND
216	4-642-228-01	SHEET, RADIATION
217	4-641-765-01	GASKET (LA)
218	4-641-766-01	GASKET (LB)
B1	7-628-254-00	SCREW +PS 2.6X5
B2	7-628-253-90	SCREW +PS 2.6X4
B3	4-641-726-01	SCREW (M2X4), SPECIAL HEAD
B4	7-628-253-20	SCREW +PS 2X6

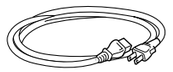
Ref.No.	Part No.	Description
		ACCESSORIES & PACKING MATERIALS
		**********
⚠301	1-475-583-21	ADAPTOR, AC
302	1-528-934-11	BATTERY PACK, LITHIUM ION
⚠303	1-782-614-11	CORD, POWER
	4-637-494-01	INSTRUCTION
*	4-640-476-01	OFFICE FAMILY LABEL
	3-865-313-02	MANUAL INSTRUCTION
		(DIGITALMEDIA PARK 103)
	3-865-962-01	MANUAL INSTRUCTION
*	3-865-963-01	MANUAL INSTRUCTION
*	3-865-964-01	MANUAL INSTRUCTION

301
AC adaptor (1)



302
Battery pack (1)

303
Power cord (1)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.